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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of:		Attorney Docket 3285A
Inventor:	Joel D. Martz	
Serial No.:	10/830,176	
Filed:	April 21, 2004	
For:	Hybrid Microporous Membrane	
Examiner:	Arti R Singh	
Art Unit:	1771	

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COVER SHEET FOR TRANSMITTAL OF CORRECTED APPELLANT'S BRIEF

The Appellant's Brief was filed previously on March 8, 2007. A communication dated May 2, 2007 from the United States Patent and Trademark Office advised the applicant that the brief did not contain the required concise explanation of the subject matter defined in each of the independent claims involved in the appeal. The communication specifically noted that the claimed invention is not mapped to independent claim 13, which shall refer to the specification by page and line number and to the drawings.

The brief has been corrected in section V "SUMMARY OF CLAIMED SUBJECT MATTER" to provide the required explanation of the subject matter defined in each of the independent claims, including claim 13, with references to the specification and the drawings.

Additionally, explanations of the subject matter defined in each of the dependent claims is also provided. This is believed to meet all of the requirements of the communication.

The corrected brief is attached to this cover sheet.

Respectfully submitted,

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June 1, 2007

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APPELLANT'S BRIEF

This is an appeal from the Final Rejection (dated March 23, 2006) of the claims in the above-identified application. A Notice of Appeal was filed on September 19, 2006. The small-entity fee $250.00 required for submission of this brief has already been paid. An appendix of the claims involved in this appeal is attached hereto.

I. REAL PARTY IN INTEREST

The real party in interest in this Appeal is: Joel D. Martz

II. RELATED APPEALS AND INTERFERENCES

There are no directly related appeals or interferences regarding this application.

III. STATUS OF CLAIMS

Claims 1-13 are pending in the application.

Claims 1-13 have been finally rejected.

The claims on appeal are claims 1-13.

IV. STATUS OF AMENDMENTS

No response, other than the above-noted Notice of Appeal, has been filed after the Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

With reference to the present specification and drawing figures, the present invention, as set forth in claim 1, relates to a microporous membrane with a coating of breathable material which augments a liquid penetration resistance of the membrane while maintaining transport of moisture vapor, wherein the coating is a film.

The invention, as set forth in independent claim 13, relates to a hybrid microporous membrane having layers of material, disposed one upon another, wherein a first of the layers of material comprises a breathable film impeding passage of liquid water while communicating water vapor, and a second of the layers of material comprises a microporous membrane having pores extending through the microporous membrane with a mean pore size

in the range of 0.1 - 5.0 microns, and wherein the breathable film has a thickness in the range of 0.5 – 10 microns.

A cross-sectional view of the structure of the subject matter of claim 1 and of claim 13 is presented in Fig. 2. The microporous membrane 10 is supported on a section of substrate 16, and is disposed as a middle layer with a coating 12 of breathable film as a top layer adhering to the microporous membrane 10 (page 3 of the specification, at lines 17-23). The top layer of the coating 12 and the middle layer of the microporous membrane 10 constitute a hybrid microporous membrane 14. The bottom layer represents the substrate 16, upon which the hybrid microporous membrane 14 may be mounted.

In claim 13, the recital of the mean pore size of the membrane being in the range of 0.1 - 5.0 microns finds support in the specification on page 7 (line 22), and the breathable film (coating 12) having a thickness in the range of 0.5 – 10 microns finds support in the specification on page 5 (three lines from the bottom of the page).

A sectional view of the hybrid microporous membrane is shown in Fig. 1, wherein the darker part of the photomicrograph represents portions of the monolithic coating of the breathable film, and the lighter part of the photomicrograph represents portions of the microporous membrane (page 3 of the specification, at lines 14-17).

The advantages of the invention are attained by a construction of breathable film with a supportive backing layer, wherein the nature of the backing layer permits use of a breathable film having a reduced thickness, with a consequential reduction in cost of the finished product. The backing layer is itself a membrane with pores or passages that extend through the porous membrane so as to enable the membrane to maintain a moisture vapor transport, namely, to be breathable, while the breathable film on the surface of the porous membrane serves as a barrier to the ingress of unwanted liquids (page 2 of the specification, at lines 2-6). In a preferred embodiment of the invention, the breathable film is applied as a coating to a

microporous membrane to augment a liquid penetration resistance of the membrane while maintaining transport of moisture vapor through the coating and the membrane.

According to claim 2, the coating is a urethane polymer or a hydrophilic cellulose (specification page 7 at line 26).

According to claims 3 and 4, the membrane is any one of polyethylene, polypropylene, polyurethane, PTFE, aramid, or nylon (specification page 7 at lines 19-21).

According to claim 5, a mean pore size of the membrane is in the range of 0.1 - 5.0 microns, and the membrane has a thickness in the range of 10 - 100 microns (specification page 7 at line 22).

According to claim 6, the coating has a thickness in the range of 0.5 – 10 microns (specification page 7 at line 22).

According to claim 7, the thickness of the membrane is greater than a thickness of the coating (specification page 7 at line 23).

According to claim 8, augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to pass ASTM 1670 and ASTM 1671 or similar Standards for Medical Products such as Surgical Gowns (specification page 7 at lines 7-9).

According to claim 9, augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to pass a testing for chemical penetration per ASTM 903 when tested with chemicals per ASTM 1001; Chemical Warfare / Terrorist Chemicals, and other Industrial chemicals used in agriculture (specification page 7 at lines 8-11).

According to claim 10, augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to exhibit improved permeation resistance as tested by ASTM 739 test or similar test for chemical objectives per ASTM 903 when tested with chemicals per ASTM 1001, Chemical Warfare / Terrorist Chemicals, and other Industrial chemicals used in agriculture (specification page 7 at lines 12-15).

According to claim 11, augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to exhibit improved penetration resistance as measured by ASTM 903 or similar Liquid Barrier Tests for blood and/ or urine while maintaining moisture vapor transmission as used in Feminine Hygiene, Incontinence Products and Diapers (specification page 7 at lines 15-18).

According to claim 12, the coating extends over a portion of the microporous membrane, while being absent in a further portion of the microporous membrane (specification page 7 at lines 4-7).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following ground of rejection is treated in this appeal.

1. Whether Claims 1-13 should be rejected under 35 U.S.C. 103 as being unpatentable over Fragstein (US 6,074,738) for reasons set forth in Point 4 of the Final Office Action, which reasons appear in Points 2-4 of the previous Office Action.

VII. ARGUMENT

In the Final Office Action, claims 1-13 were rejected under 35 U.S.C. 103 as being unpatentable over the teachings of Fragstein (US 6,074,738) for reasons set forth in the Action.

The following argument is presented to overcome the grounds of rejection raised by the examiner, and to show the presence of allowable subject matter in the claims.

FIRST, AND ONLY, ISSUE OF WHETHER CLAIMS 1-13 SHOULD BE REJECTED UNDER 35 U.S.C. 103 AS BEING UNPATENTABLE.

Claim 1 recites that the microporous membrane has a coating of breathable material, and recites furthermore that the coating is a film. It appears that the examiner, in applying the Fragstein reference, does not distinguish between the characteristics of a coating and the characteristics of a film. Since both of these terms appear in the claim, it is important to establish how the term "film" limits the term "coating".

It is important to note that the present specification provides significant teachings as to what constitutes a film in the practice of the present invention. When one understands the meaning of the term "film", and also the meaning of the terms "coating" and "membrane" as presented in the specification, and applies the meanings of the specification in the interpretation of the claims, it becomes apparent that the teachings of Fragstein do not suggest the present invention, and that therefore the present claims do have patentable subject matter.

Meanings Of Terms In The Claims

In order to appreciate the meaning of the limitation "film" in claim 1, and in its dependent

claims, it is advantageous to consider the use of the term "film" generally, as taught by a well-known dictionary. By way of example, definitions of film and related terms, as presented in the Merriam Webster unabridged dictionary, are now discussed.

The term "film" has a variety of meanings in the English language. These include:_A thin, flexible, transparent sheet, as of plastic, used in wrapping or packaging. Also, one may consider a thin sheet or strip of flexible material, such as a cellulose derivative or a thermoplastic resin, coated with a photosensitive emulsion and used to make photographic negatives or transparencies. Furthermore, one may consider a thin sheet or strip of developed photographic negatives or transparencies, as well as a movie and movies considered as a group.

Other meanings (or uses) of the term "film" include: a thin skin or membrane; a thin, opaque, abnormal coating on the cornea of the eye; and a thin covering or coating such as a film of dust on a piano. Yet another meaning or use of the term "film" is a coating of magnetic alloys on glass used in manufacturing computer storage devices.

It is important to consider also what is not considered to be a film. A coating of flour or dough is not a film; also, a coating of sand on a floor is not a film. In view of the many situations wherein the term "film" is applicable, and wherein the term "film" is not applicable, it is useful to establish guidelines for the use of the term "film". The term "film", as used in the present patent application, is understood to be descriptive of objects having the characteristics of being continuous, being solid, and having a penetration resistance in accordance with an industrial standard. As a further characteristic of film used in the present application, film may be breathable in terms of a moisture vapor transport, even though the film is a solid.

The term "coating" also has a variety of meanings in the English language. A coating may be a layer of any substance used as cover, protection, decoration, or finish, and also refers to cloth for making coats.

The term "membrane" also has a variety of meanings in the English language, such as a thin soft pliable sheet or layer especially of animal or vegetable origin, and is also used to refer to a piece of parchment forming part of a roll. In the biological sciences, the term "membrane" is understood to mean a limiting protoplasmic surface or interface.

In view of the wide variety of meanings and uses of the foregoing terms, in order to specify what is meant by these terms in the teaching of the present invention in the present specification, the specification goes into considerable detail in terms of explaining what characteristics of material warrant a use of the descriptor "film", "coating", and/or "membrane".

Citations Of Definitions of Terminology In Specification

Reference is made now to various passages in the specification to show definition of "film" and other terminology appearing in the claims, this definition being in terms of properties of the film which distinguish the term "film" from other meanings of "film". By understanding what is meant by "film", as well as other terminology such as "coating" and "membrane", the claimed subject matter can be compared more accurately to the teachings of Fragstein. It is believed that the more accurate comparison of the claimed subject matter with the teachings of Fragstein will show a patentable distinction between the claimed subject matter and the teachings of Fragstein so as to obtain allowable subject matter in the claims. The following passages from the specification are noted.

The paragraph on page 1, beginning at line 10, teaches that:

> A breathable membrane or film is permeable to water vapor but impervious to liquid water, and . . . must be thick enough to have inherent strength to insure its integrity while being handled by a person.

The paragraph linking pages 1-2 teaches that:

In the construction of breathable film with a supportive backing layer, the backing layer permits use of a breathable film having a reduced thickness, with a consequential reduction in cost of the finished product. Further, it is taught that the breathable film is applied as a coating to a microporous membrane to augment a liquid penetration resistance of the membrane while maintaining transport of moisture vapor through the coating and the membrane.

The paragraph linking pages 2-3 teaches that:

Enhanced protective abilities to a microporous membrane are obtained by a layer of solvent or water based polymeric compounds that that are film forming and/or hydrophilic, and that inherently retain moisture vapor transmission ability, breathability, when dried on top of or within the microporous structure of such membranes. Further, the coated "breathable" polymeric barrier or such added coated breathable film within or on top of the pores of the microporous membrane aids in enhancing permeation resistance as well.

The paragraph linking pages 4-5 teaches that:

With respect to a microporous membrane, reliable protection to a standard is assured or maintained. In order to provide the requisite protection against the ingress of unwanted fluids while maintaining desired breathability, a coating of the breathable film is disposed on the surface of the microporous membrane.

The following paragraph teaches that:

Added penetration resistance is accomplished by forming a monolithic membrane or hydrophilic membrane, or film, within or on the surface (as the coating 12) of the

microporous membrane 10. Monolithic membranes are usually continuous membranes or membranes with an ultra-microporous structure with pore sizes an order of magnitude smaller than the base microporous membrane.

It is taught further that the more compact structure provides the added penetration resistance. Outward moisture vapor occurs in solid membranes because of hydrophilic (water loving) polymers within some monolithic membranes which create a diffusion process for outward moisture transmission from wetter to drier conditions, such as outward sweat passage away from the body into the ambiance.

The paragraph linking pages 5-6 teaches that:

The quality of inherent liquid penetration resistance and augmented penetration resistance may be determined by test methods such as ASTM 903; and other characteristics, such as Moisture Vapor Transmission Rates, can be measured by other ASTM tests, as described in the specification.

The paragraph near the bottom of page 6 teaches that:

A type of breathable membrane that prevents liquid penetration but allows for outward moisture elimination is the monolithic or solid membrane.

The paragraph linking pages 6-7 teaches that:

In the case of Surgical Gowns and other protective garments, the augmented membrane would be capable of passing numerous ASTM tests, as described in the specification.

Comments on the Final Office Action

In Point 2 of the Action, the examiner notes that the only ground of traversal (of the examiner's position in the First Action dated 08/10/2005) is that the coating used by the cited art (Fragstein) is not a film. The examiner goes on to state that the specification does not define either a coating or a film that is being traversed, and that therefore the usual industry known meaning of film and coatings are used.

It is urged that the foregoing citations of various passages in the specification shows that the specification is defining "film" and "coating" in terms that are consistent with the dictionary definitions and with the practice of industry, and that this definitions of these terms must carry over into the interpretation of these terms in the claims.

The examiner stated that the rejection of the claims on the teachings of Fragstein, in the Final Action, is for the same reasons as set forth in the First Action. The grounds of rejection in the First Action were traversed for reasons set forth in the Remarks of Applicant's response to the First Action. Applicant's response is believed still to be valid, particularly in view of the foregoing definitions of terminology, and is summarized below.

The cited Fragstein (Abstract) teaches a composite of a layer of microporous polymer that is water-vapor permeable, oleophobic, and liquid-water resistant. This is in contact with a further layer that is an air-permeable, liquid-water resistant polymer layer permeable to water vapor molecules. This teaching also appears in col. 2 at lines 31-37, a passage cited by the examiner. In a further passage cited by the examiner in col. 1 at lines 10-13, there is a teaching of a flexible laminate composite suitable for use in water resistant but water vapor permeable textiles. The chemical compositions of materials that may be employed in the fabrication of the microporous layer are identified in col. 3 at lines 47-53, also cited by the examiner. The examiner also noted that various parameters of ePTFE layers can vary, depending on application, as set forth in col. 6 at lines 43-44.

In the Fragstein patent, it appears that the term "film" is employed in describing the microporous layer (col. 2 at lines 49-51), but there is no teaching of the use of a film with reference to the coating (line 63) that provides the polymer producing the oleophobic characteristic (line 57) in a microporous layer of the Fragstein composite.

Film is an important component of the present invention and, therefore, it is important to understand the difference between a film and a coating. This can be demonstrated readily by reference to the blowing of bubbles by children by use of a loop dipped in water. If the loop is dipped into plain water, and then lifted out of the water, water is found to adhere to the loop and to the handle, in the manner of a coating, but there is no film extending across the loop. Upon repeating the foregoing experiment with soapy water, a film of soapy water extends across the loop. In this example, a coating of plain water would not be regarded as a film forming coating. However, a coating of soapy water would be regarded as a film-forming coating.

As taught on page 5 (last full paragraph) of the present specification, in the construction of the hybrid microporous membrane 14 of the invention, the monolithic breathable membrane is applied by a thin gauge liquid application technology ideally capable of creating augmentation the breathable film or coating 12 with a thickness in the range of 0.5 - 10 microns. Thus, in the construction of the present invention, one uses a coating that can form a film across pores of a microporous membrane.

However, a contrary teaching appears in Fragstein, wherein (col. 3 at lines 60-64) the coating of the oleophobic polymer is applied in a fashion allowing ingress upon the internal surfaces of the microporous structure, but not to fill the pores because such filling would destroy or decrease the moisture vapor transmission of the microporous layer. The polymeric coating of Fragstein is clearly not a film forming coating. This is a clear distinction from the present invention wherein the coating is employed to produce a film that extends across the pores of the microporous layer.

Thus, Fragstein teaches a mode of construction that is contrary to the practice of the present invention, and cannot serve to make the present invention obvious to support a rejection under 35 U.S.C. 103.

In the middle of page 3 of the Office Action, the examiner concludes from the examples of Fragstein that the microporous layer is much thicker than the coating layer, which coating layer is understood to be the polymer providing the oleophobic property. The examiner then concludes that one has freedom to make the coating as thin as desired, such as a thickness of 0.5-10 microns, this corresponding to the teaching of the present application on page 5, as noted above.

This logic of the examiner is traversed respectfully because it is believed that control of thicknesses of layers at such a small thickness, particularly over the opening of a pore, can be accomplished only by placing a film over the opening of the pore. In Fragstein, no such film can be formed because of the nature of the liquid polymer to flow into the pore, as confirmed by Fragstein when he cautions against allowing too much of the polymer to flow into a pore, as has been described above.

Therefore, the analogy between the Fragstein structure and the present structure cannot be maintained, particularly in view of the amending of claim 1 to recite the film of breathable material overlaying the microporous material.

Furthermore, Fragstein teaches that, with respect to the application of his polymer in the manner of a coating, the application of the Fragstein polymer is continued until a proper coating of the interior pore surfaces is attained, but must be stopped prior to a filling of the pores. This also teaches away from the practice of the present invention, because a builder of the Fragstein structure does not have the freedom to adjust the thickness of the coating layer (identified as the layer b in the Fragstein description). This would make it impossible to apply

the coating material to produce a thin film, as is done in the present invention. For this reason, also, the logic of the examiner in assuming that the thickness of coating layer is a matter of choice, cannot stand.

By way of further example, in the present application, the paragraph linking pages 5-6 presents a listing of several standard tests for verify characteristics of the membrane of the present invention, these characteristics including liquid penetration resistance, industrial chemical penetration resistances, resistance to blood and blood borne pathogens, and moisture vapor transmission rate. Thus, the film characteristics, such as the film thickness, must be carefully controlled and selected to meet a variety of tasks, such as those for which the above tests are conducted. However, in the case of Fragstein, the mode of construction of his polymer coating is dictated by the amount of polymer in a pore, and does not provide freedom to adjust a thickness of film that can meet all the requirements of the present microporous coated membrane.

Furthermore, the materials employed in the present invention for fabrication of the film, urethane polymer or a hydrophilic cellulose (as set forth in claim 2), are not disclosed in Fragstein. In fact, Fragstein would not use the coating (film) materials of the present invention because his goal to produce oleophobicity for which he uses other chemistry as is set forth in col. 2 at lines 56-65.

The foregoing argument shows clear distinctions between the presently claimed subject matter and the teachings of Fragstein. Therefore, it is urged that, based on the teachings of the cited art, the rejections of the present claims should be withdrawn, and the claims should be found to contain allowable subject matter.

It is requested respectfully that the BOARD OF PATENT APPEALS AND INTERFERENCES reconsider the foregoing grounds of rejection under 35 U.S.C. 103, and find the present claims to be allowable.

Respectfully submitted,

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VIII. CLAIMS APPENDIX

The texts of the claims involved in the appeal are:

1. A coated microporous membrane comprising a microporous membrane with a coating of breathable material which augments a liquid penetration resistance of the membrane while maintaining transport of moisture vapor, wherein the coating is a film.

2. A membrane according to claim 1 wherein the coating is a urethane polymer or a hydrophilic cellulose.

3. A membrane according to claim 2 wherein the membrane is any one of polyethylene, polypropylene, polyurethane, PTFE, aramid, or nylon.

4. A membrane according to claim 1 wherein the membrane is any one of polyethylene, polypropylene, polyurethane, PTFE, aramid, or nylon.

5. A membrane according to claim 1 wherein a mean pore size of the membrane is in the range of 0.1 - 5.0 microns, and the membrane has a thickness in the range of 10 - 100 microns.

6. A membrane according to claim 5 wherein the coating has a thickness in the range of 0.5 – 10 microns.

7. A membrane according to claim 5 wherein the thickness of the membrane is greater than a thickness of the coating.

8. A membrane according to claim 1 wherein augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the

membrane to pass ASTM 1670 and ASTM 1671 or similar Standards for Medical Products such as Surgical Gowns.

9. A membrane according to claim 1 wherein augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to pass a testing for chemical penetration per ASTM 903 when tested with chemicals per ASTM 1001, Chemical Warfare / Terrorist Chemicals, and other Industrial chemicals used in agriculture.

10. A membrane according to claim 1 wherein augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to exhibit improved permeation resistance as tested by ASTM 739 test or similar test for chemical objectives per ASTM 903 when tested with chemicals per ASTM 1001, Chemical Warfare / Terrorist Chemicals, and other Industrial chemicals used in agriculture.

11. A membrane according to claim 1 wherein augmentation of the liquid penetration resistance of the membrane by the coating of breathable material provides a capability of the membrane to exhibit improved penetration resistance as measured by ASTM 903 or similar Liquid Barrier Tests for blood and/ or urine while maintaining moisture vapor transmission as used in Feminine Hygiene, Incontinence Products and Diapers.

12. A membrane according to claim 1 wherein the coating extends over a portion of the microporous membrane, while being absent in a further portion of the microporous membrane.

13. A hybrid microporous membrane comprising layers of material, disposed one upon another, wherein a first of said layers of material comprises a breathable film impeding passage of liquid water while communicating water vapor, and a second of said layers of

material comprises a microporous membrane having pores extending through the microporous membrane with a mean pore size in the range of 0.1 - 5.0 microns, and wherein the breathable film has a thickness in the range of 0.5 – 10 microns.

IX. EVIDENCE APPENDIX

There is no evidence appendix.

X. RELATED PROCEEDINGS APPENDIX

There is no related proceedings appendix.

XI CERTIFICATE OF SERVICE

There is no certificate of service.